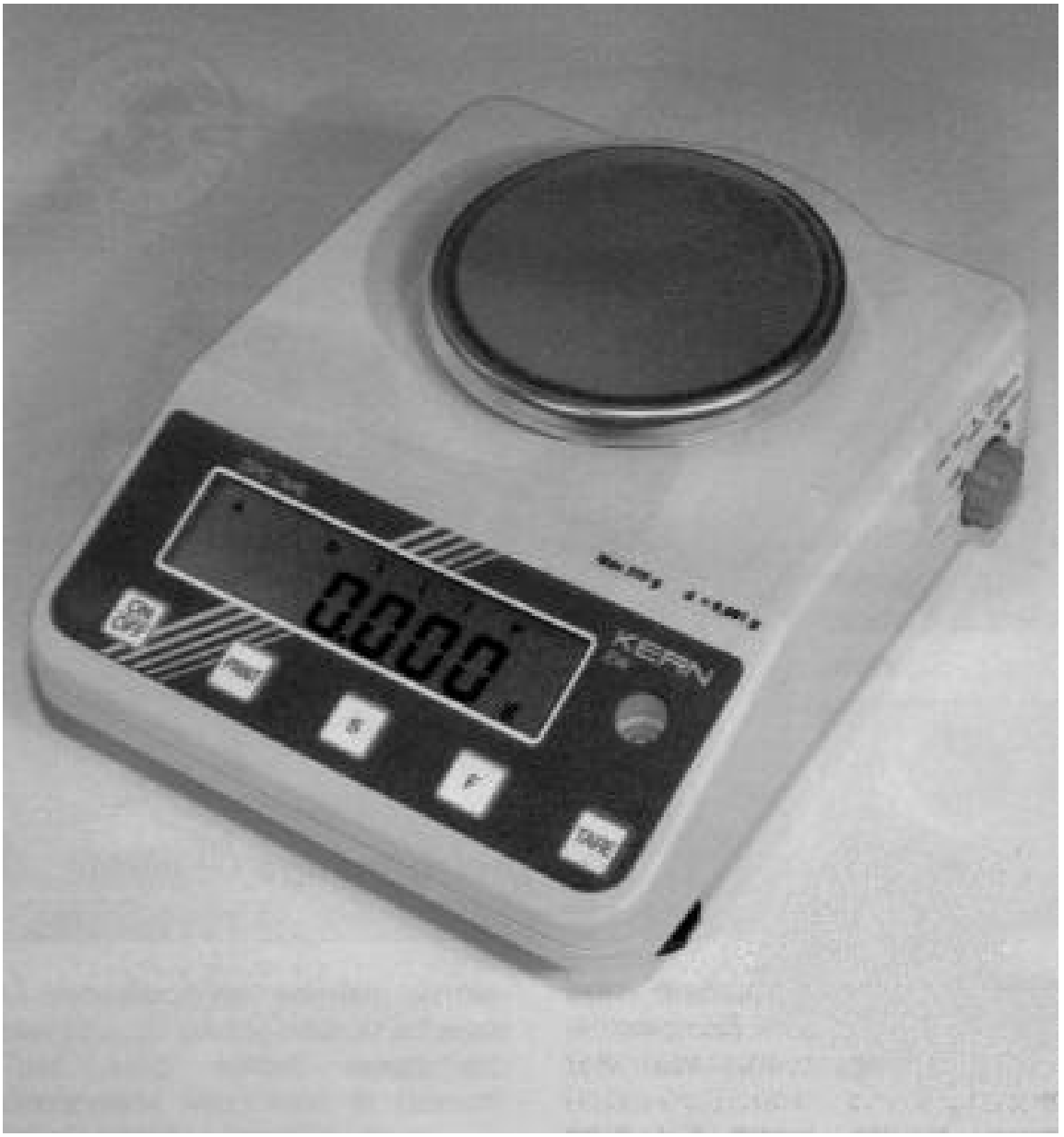

Servicemanual for electronic precision balances series

KERN EW/EG

Version 1.1 07/98

EW/EG-SU-e-9811

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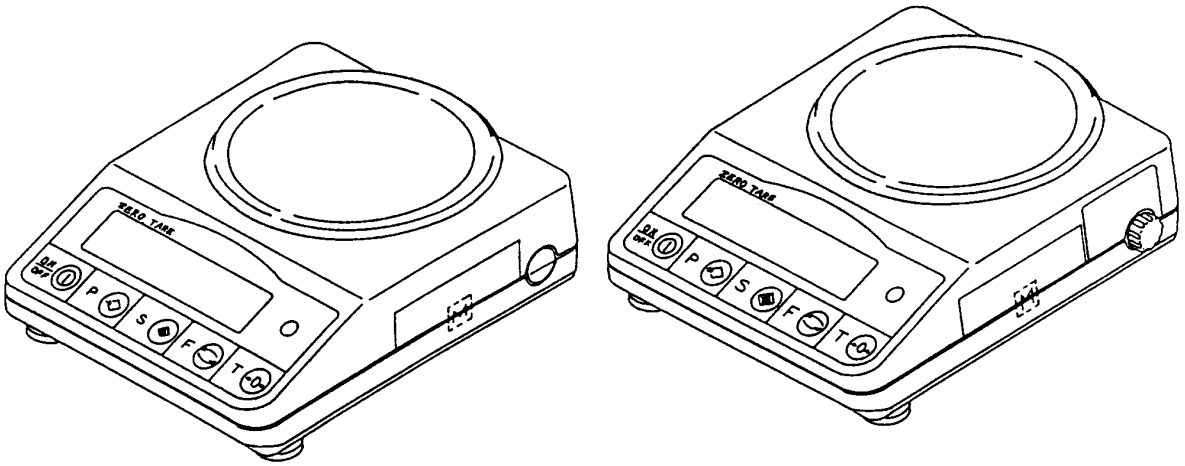
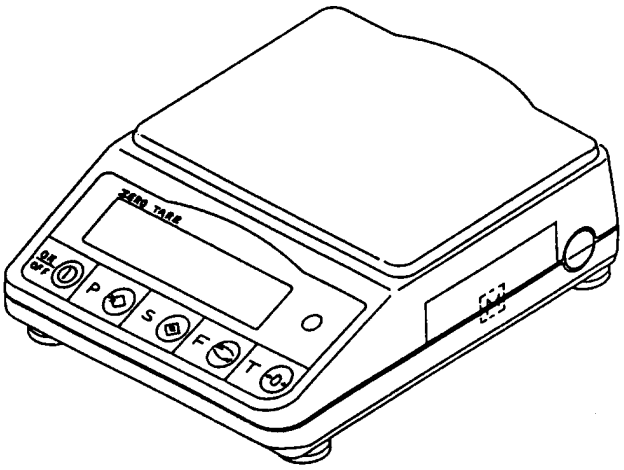
1 SECTION 1. TOTAL VIEW OF EW/WG

Total view of round pan type - 150g --> 600g -

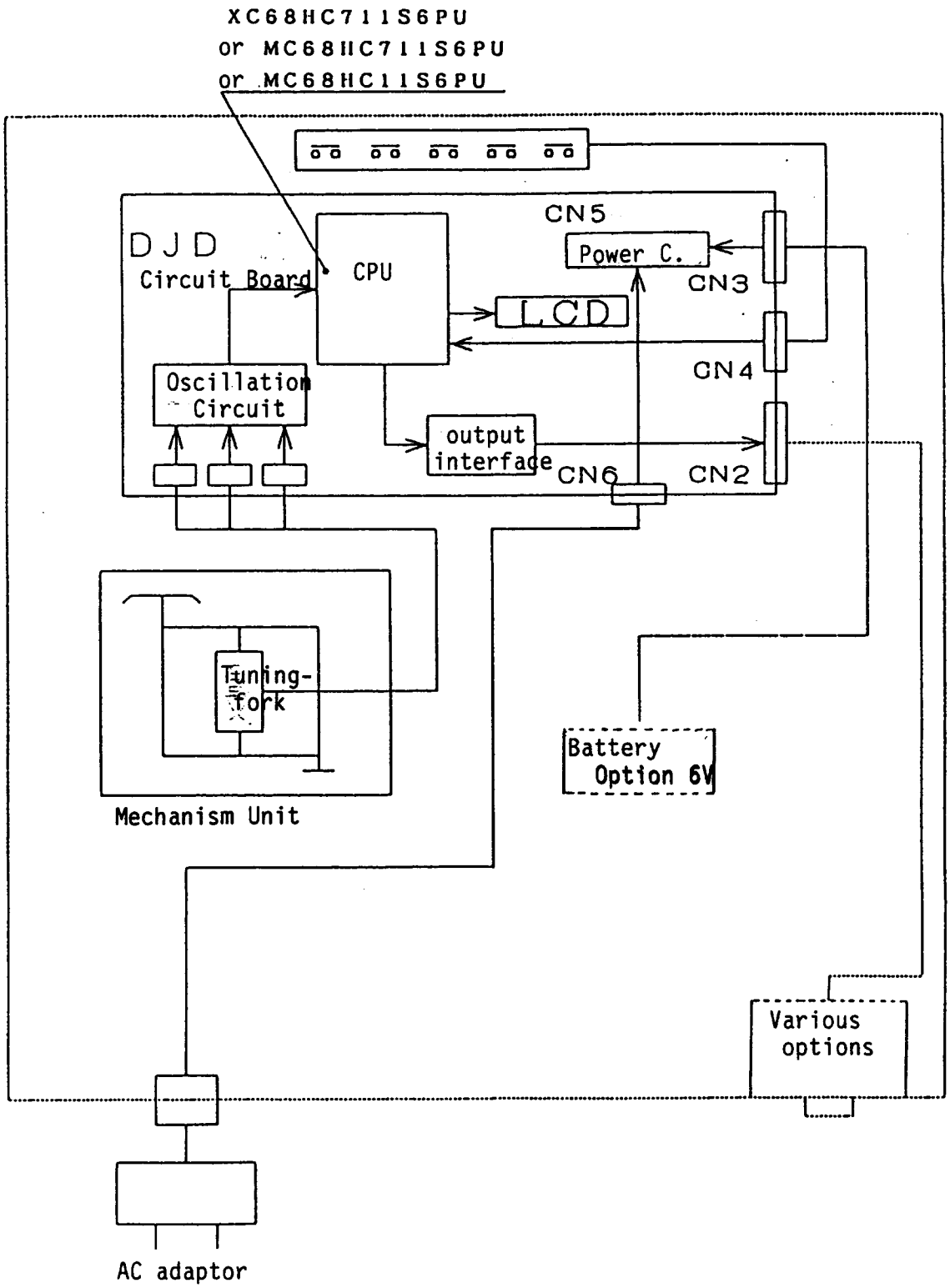


Total view of square pan type - 1500g --> 6kg -

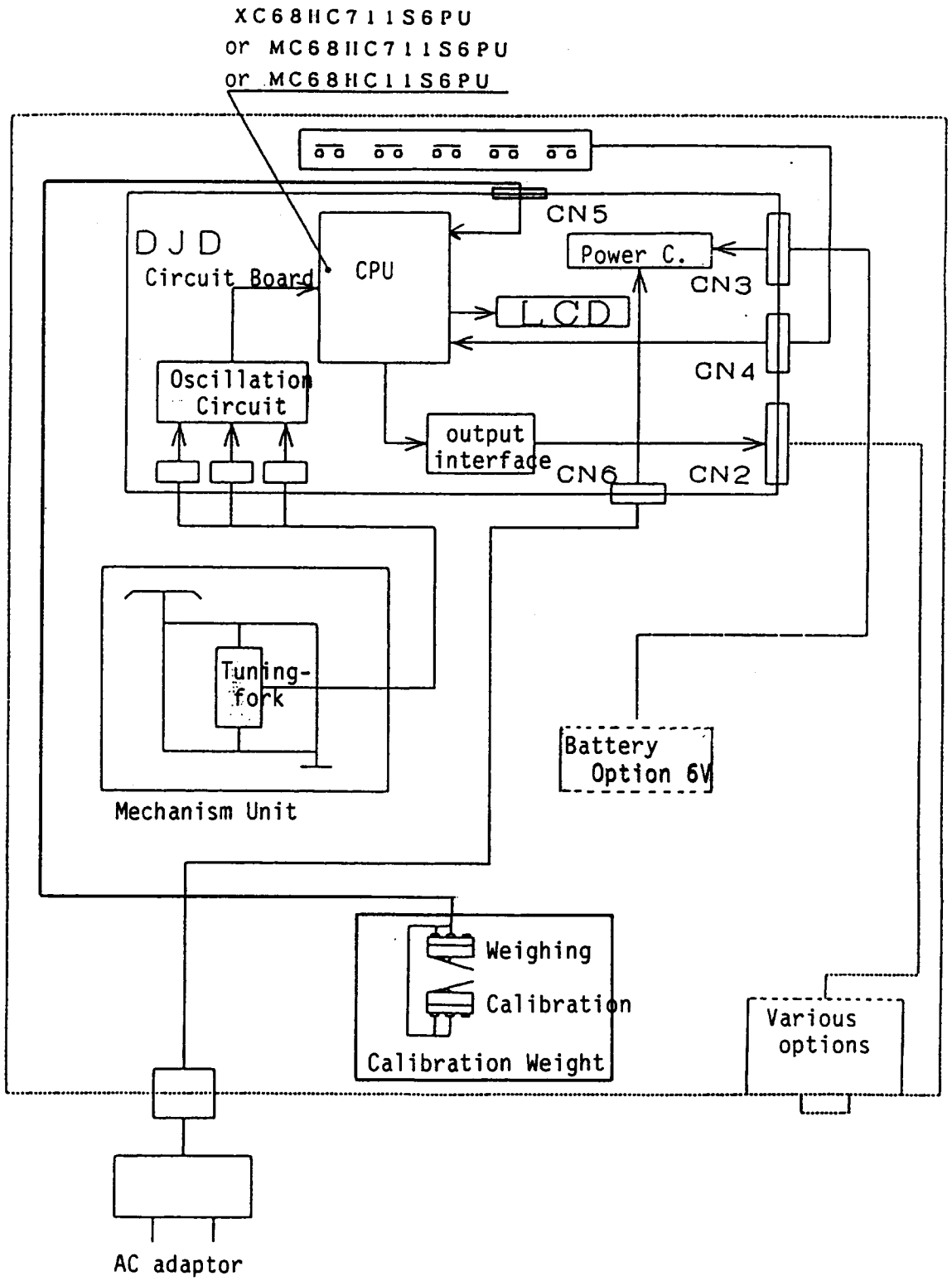


2 SECTION 2. ELECTRONIC CONSTRUCTION

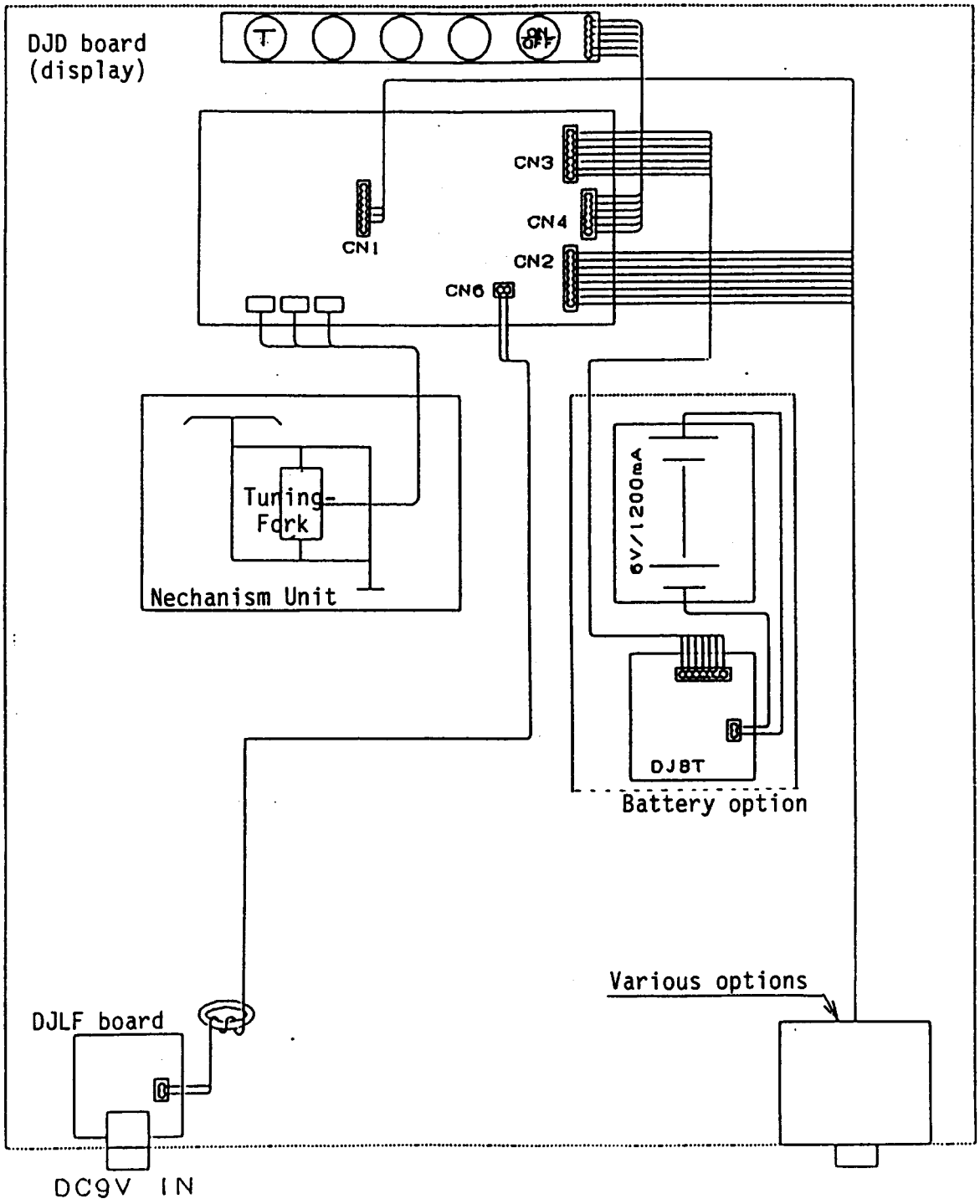
2.1 Block diagramm KERN EW type



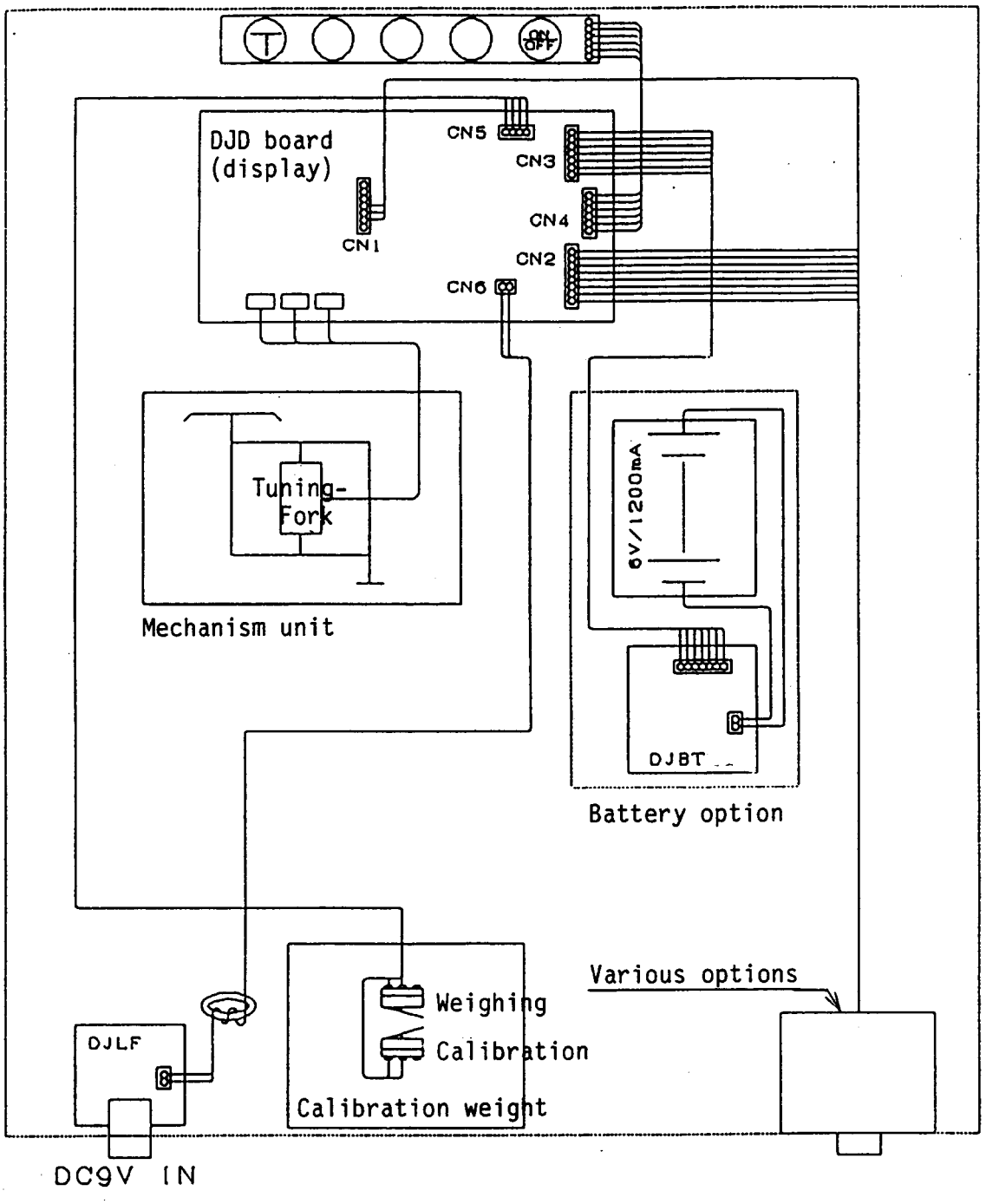
2.2 Block diagramm KERN EG type



2.3 Whole wiring KERN EW type

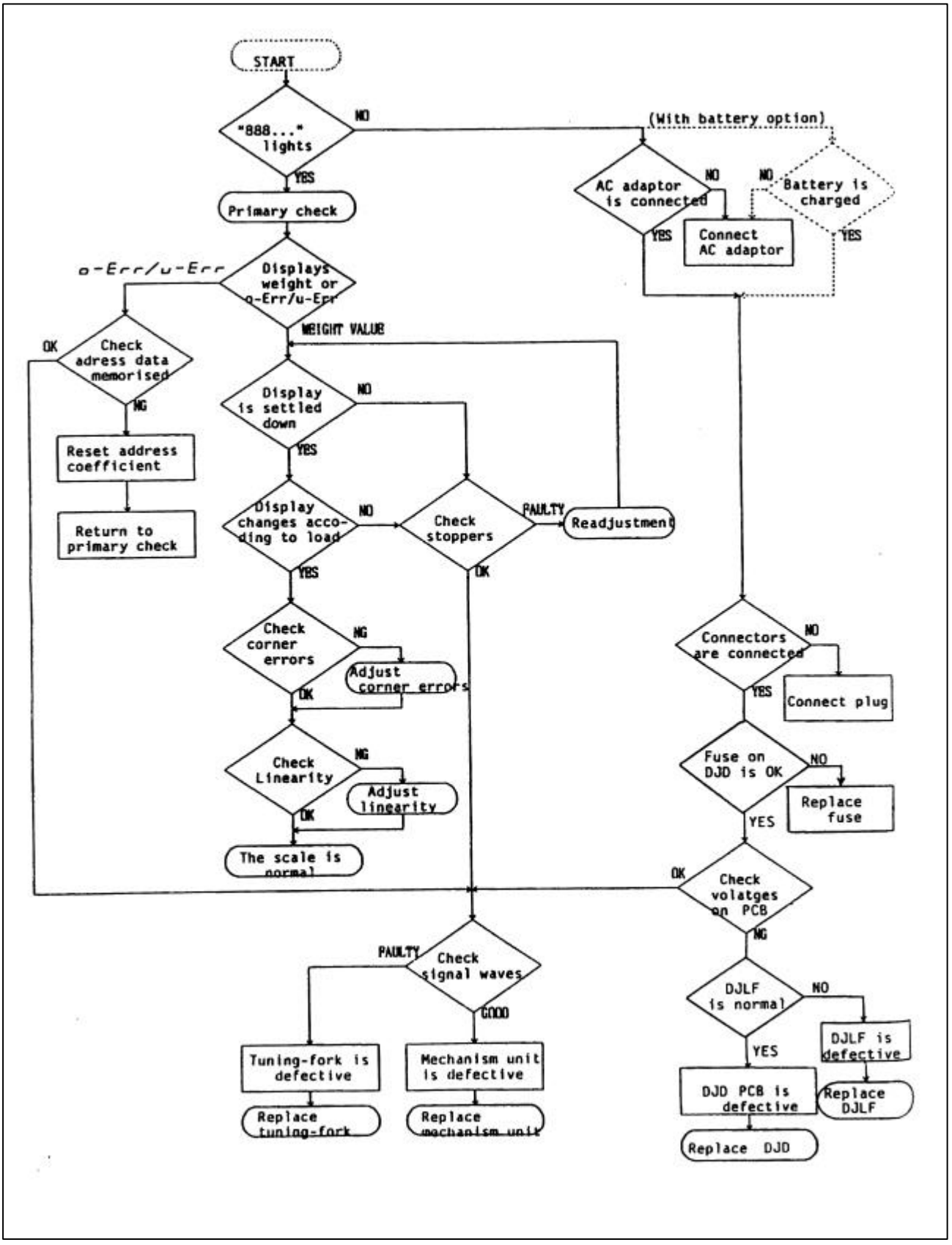


2.4 Whole wiring KERN EG type



3 SECTION 3. TROUBLESHOUTING PROCEDURE

3.1 Troubleshooting procedure



3.2 Troubleshooting table

Symptoms	Causes & Remedy
No display lights on	1. EW/EG board is defective. 2. AC adapter is defective. 3. Wrong connection of connection cords inside. 4. Built-in battery (option) is discharged.
u-Err or o-Err appears after self test of segments (888...)	1. Wrong weighing pan is applied. 2. Tuning-fork sensor or mechanism unit is defective. 3. EW/EG board is defective. 4. Setting of address data has mistake. 5. Coefficient memories (address data) have changed by noises or static electricity. Adjust linearity.
Display does not get settled down Display does not repeat correctly Zero point drifts	1. Some parts such as stopper touches others. 2. Weighing pan touches other parts. 3. Foreign substance is in the scale. 4. Tuning-fork sensor or mechanism unit is defective. 5. Affected by a wind or disturbing oscillation. Check environment or working base. Check also setting of stabilization time. See page 9 of operation manual.
o-Err appears with a net load less than specified capacity (FS + 9d)	1. Big weight applied to the scale pan (net weight + tare value) exceeds the scale capacity. 2. Coefficient memories (address data) have changed by noises or static electricity. Adjust linearity. 3. Setting of address data has mistake. 4. Calibration weight is not correct.
Span is out of specified range	1. Tuning-fork sensor or mechanism unit is defective. 2. EW/EG board is defective. 3. Setting of address data has mistake. 4. Coefficient memories (address data) have changed by noises or static electricity.
Linearity is out of specified range	1. Tuning-fork sensor or mechanism unit is defective. 2. Setting of address data has mistake. 3. Coefficient memories (address data) have changed by noises or static electricity. Adjust linearity. 4. Calibration weight is not correct.
Corner error is too much	1. Mechanism unit is defective, such as Roberval plate (spring) has been bent or twisted. 2. Pan base touches other parts.
Display suddently disappeared in operation	1. Built-in battery (option) has been consumed. 2. EW/EG board is defective. 3. AC adaptor is defective.
b-Err appears	1. EW/EG board is defective. 2. Coefficient memories (address data) have changed by noises or static electricity. Adjust linearity.
d-Err appears	1. Adress data related to determine the capacity has been destroyed -----Contact the shipper. 2. EW/EG board is defective.
1-Err	1. The calibration weight is less than ½F.S.
2-Err	1. The data error exceeds 0.4%. Or perhaps the scale may be defective. Contact the shipper.

3.3 Primary checks

1. Is any wind around the site?
   Is any oscillation?
   Is the working table stable?

2. Is anything under the pan base or the weighing pan?

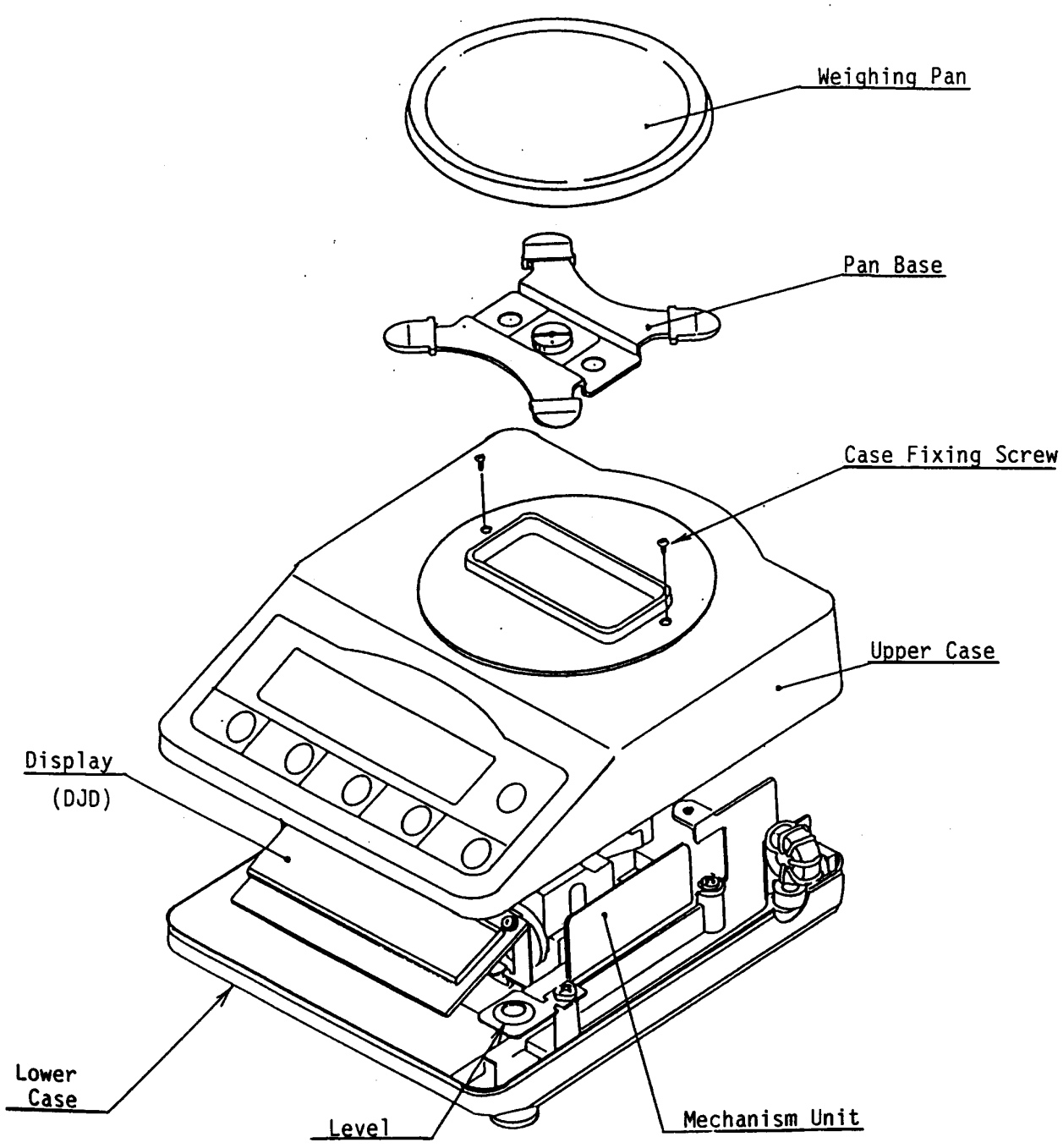
3. Is the weighing pan a right one?

4. Is AC adapter connected both with the scale and with the outlet properly?

5. Is battery option charged sufficiently?

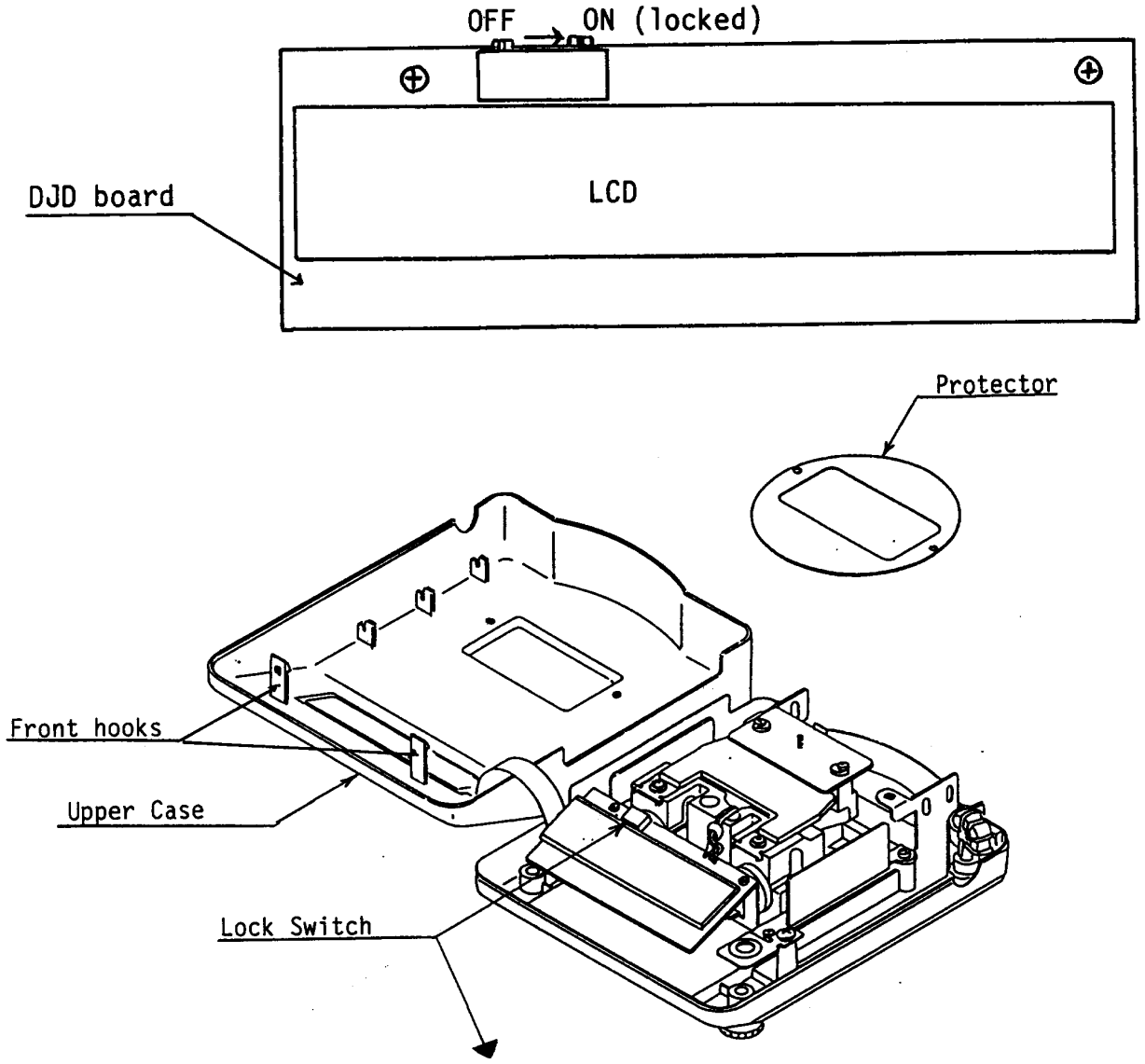
3.4 How to remove the case

1. Unplug the AC adapter.
   Remove the pan and pan base.
2. Remove (2) case fixing screws with a philip driver.
3. Locate two hooks beneath the scale near to front.
   Pull those two hooks toward you to lift the case up, then shift the case to rear to release it from rear hooks.



4. Remove the upper case and place it to the left.
   Remove protector beforehand, if any.

3.5 ON/OFF of lock switch



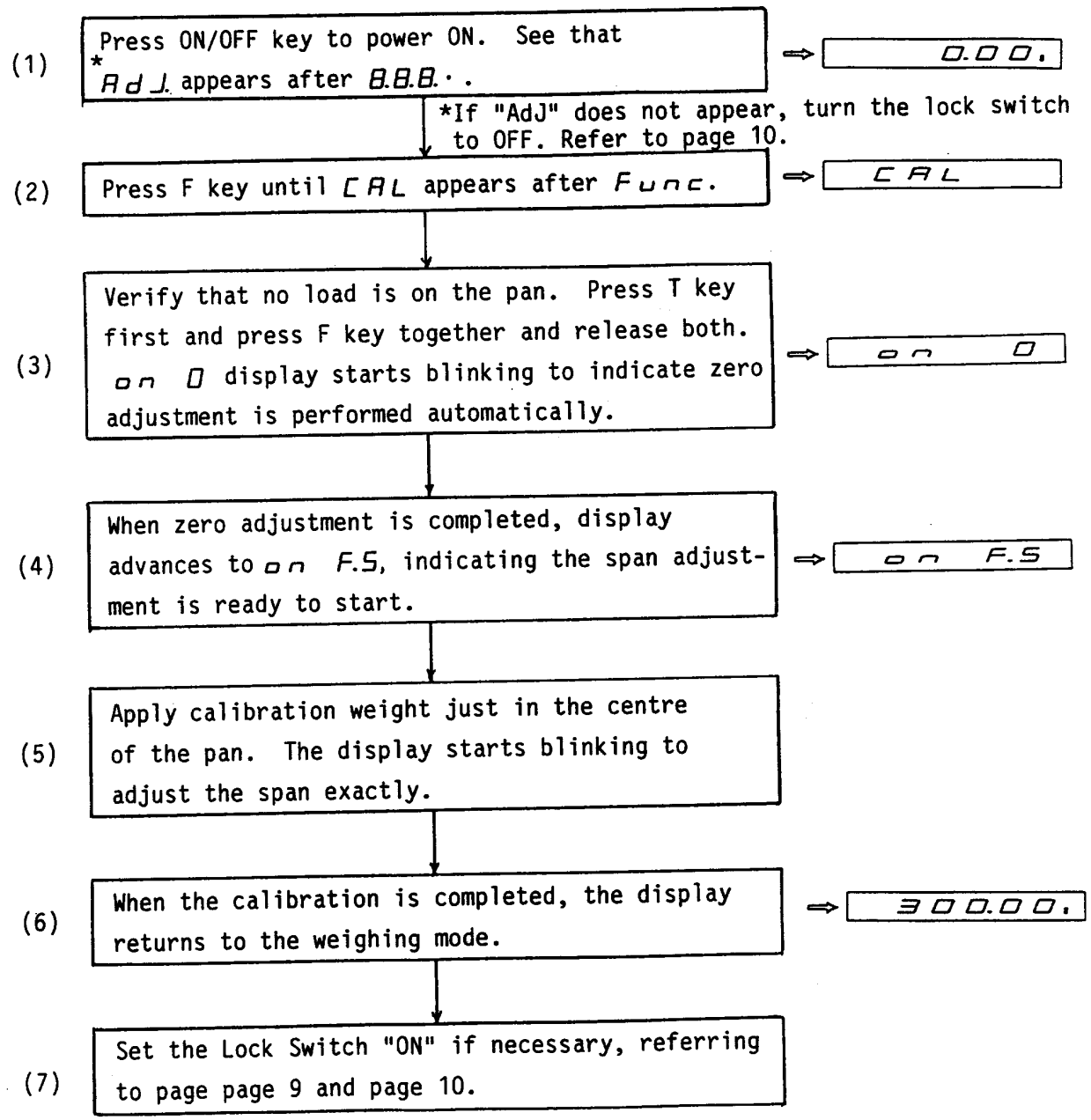
Set the lock switch to "ON" before stamping or sealing so that
the user is unable to change parameters or to calibrate the scale.

3.6 How to cover the case

1. Cover the scale with the upper case, seeing cables are just stored inside properly.
   Insert the rear hooks first, then press the upper case gently until two front hooks are set securely.
2. Drive in two case fixing screws securely.
3. Set pan base and then weighing pan on the scale.
4. Verify the setting of the Lock Switch.
   When the setting of the Lock Switch is "OFF", display shows "8.8.8....." followed by "ADJ." by energizing.

4 SECTION 4. ADJUSTMENTS AND SETTINGS

4.1 Span calibration (Cal) - EW type


(1)
Press ON/OFF key to power ON. See that
* AdJ appears after 8.8.8.· .
⇨ 0.00.
*If "AdJ" does not appear, turn the lock switch to OFF. Refer to page 10.
(2)
Press F key until CAL appears after Func.
⇨ CAL
(3)
Verify that no load is on the pan. Press T key first and press F key together and release both. on 0 display starts blinking to indicate zero adjustment is performed automatically.
⇨ on 0
(4)
When zero adjustment is completed, display advances to on F.S, indicating the span adjustment is ready to start.
⇨ on F.S
(5)
Apply calibration weight just in the centre of the pan. The display starts blinking to adjust the span exactly.
(6)
When the calibration is completed, the display returns to the weighing mode.
⇨ 300.00.
(7)
Set the Lock Switch "ON" if necessary, referring to page page 9 and page 10.

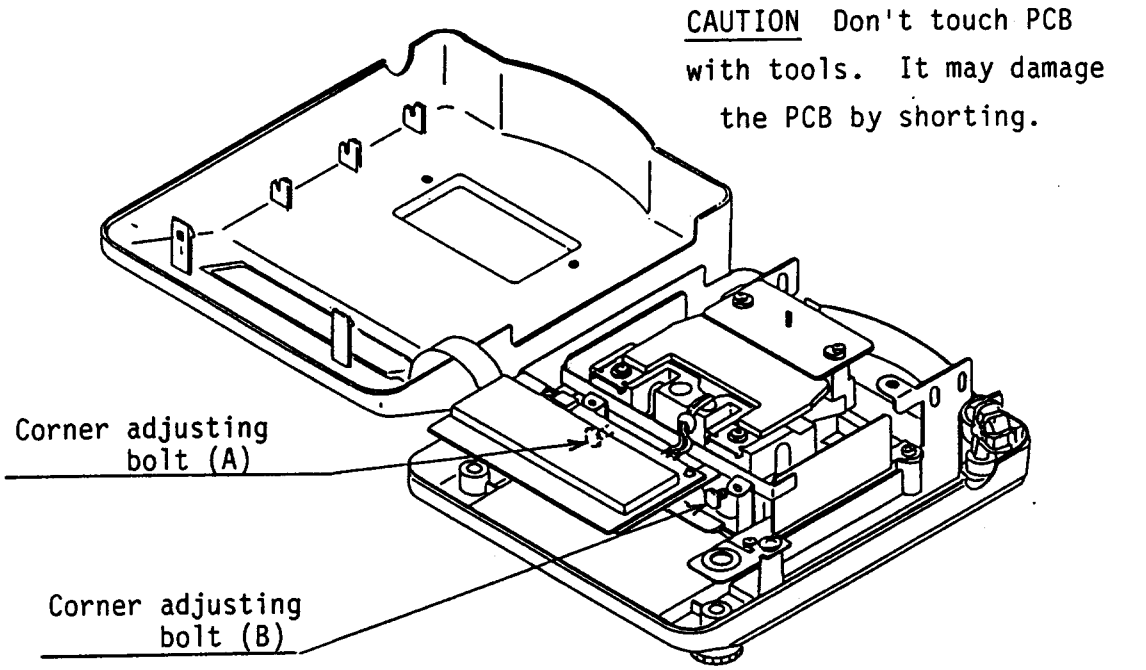
1. It is recommended to use a calibration weight of better accuracy than the scale.
2. The calibration is available with ½of F.S. Nevertheless, it is recommended to use weight closer to F.S. for accurate calibration.
3. Error messages:

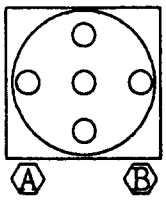
   0 - E r r : The calibration weight is over the full capacity.
   1 - E r r : The calibration weight is less than ½of the capacity.
   2 - E r r : The data error exceeds 0.4%.
   Or perhaps the scale may be defective.

4.2 Corner error adjustment

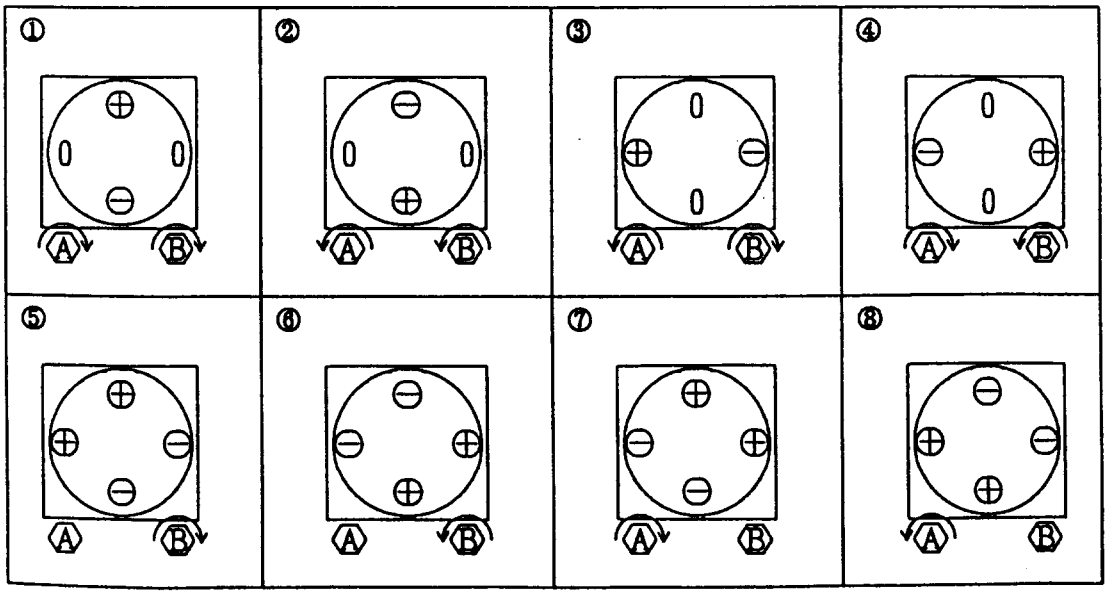
Remove the upper case referring to page 9.
Place the pan base, then place the weighing pan on the mechanism.
Adjust the level.

Remove two fixing screws on EW/EG board and place the screws on the plastic part of the lower case.
Adjust corner errors by adjusting bolts reffering to following illustrations.



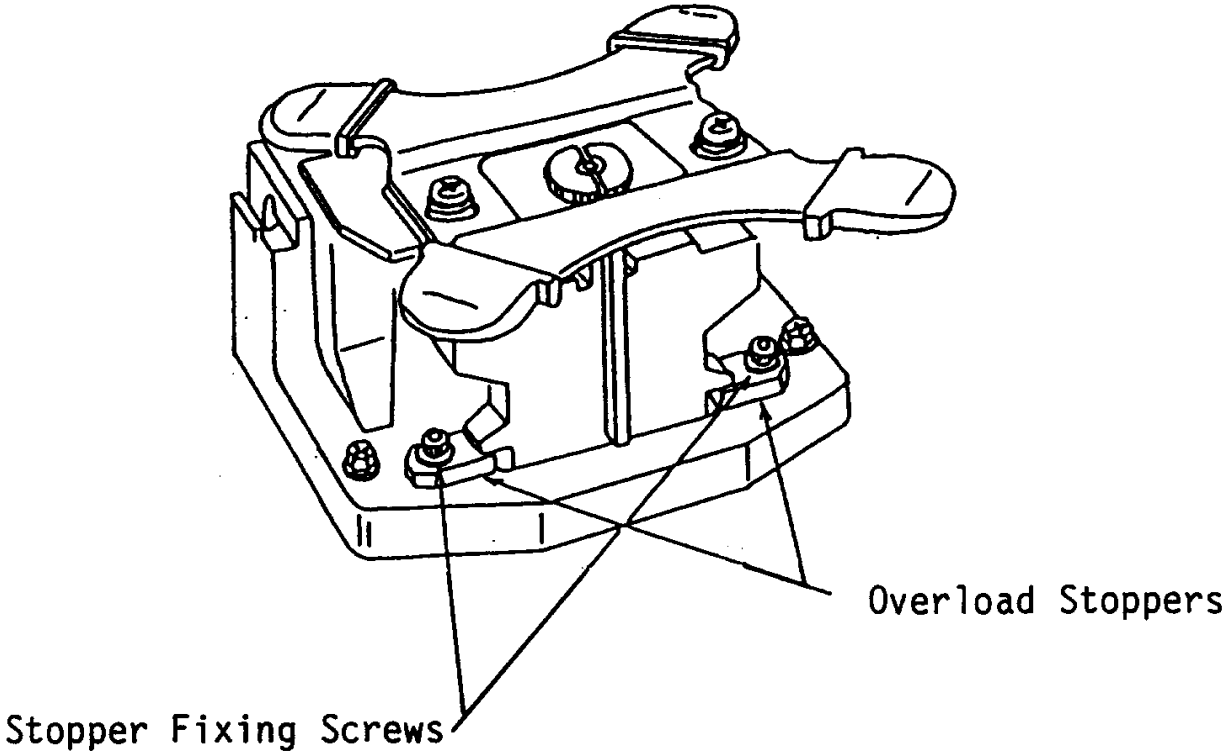


Symbols		For
⊕	:	The error is positive to the centre.
⊖	:	The error is negative to the centre.
	:	Drive the bolt clockwise.
	:	Drive the bolt counter-clockwise.



4.3 How to adjust overload stopper

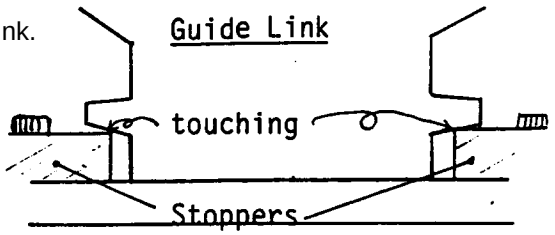
1. Apply the pan base on the mechanism.
   Then slide out stoppers by loosening two fixing screws with a hexagon wrench of 3 x 3.



2. Press the ON/OFF key to on while pressing F key and T key together
   Release both keys when DJr____ appears.

3. Apply reference weights up to the Stopper Setting Value specified in the table in page 15*1.
   Press the T key to clear the display to zero (0).

4. Insert stoppers until they slightly touch corresponding guide link.
   Holding the stopper with a screw driver
   or the like, fix the stopper by driving
   the cap screw securely.



5. The adjustment is good if display shows
   between -5g and -50g.
   Even the display shows "0", if the guide
   link touches (stopped by) stoppers by increasing reference weights up to
   Maximum specified in the table 15*2, the adjustments is good.
   HOW TO KNOW WHEN LINK TOUCHES STOPPER
   While increasing weights, when the guide link touches the stopper, the
   display will not show as much value as increased weight.
   This indicates the guide link has touched the stopper.

6. How to correct the setting
   If the display value in above 5. Is less than -50g, such as -100g for
   example, slide out stoppers a little from the guide link.
   If the display value in above 5. Is over -5g, such as +5g for example,
   insert the stoppers slightly more into the guide link.

Table for stopper positioning

Models	Weight applied for setting *1	Weight to be increased	Maximum weight to be applied *2
EW - 300 - 2M EG - 300 - 3M	600g	100g	700g
EW - 600 - 2M EG - 600 - 2M	1000g	100g	1100g
EW - 6000 - 1M	8000g	500g	8500g

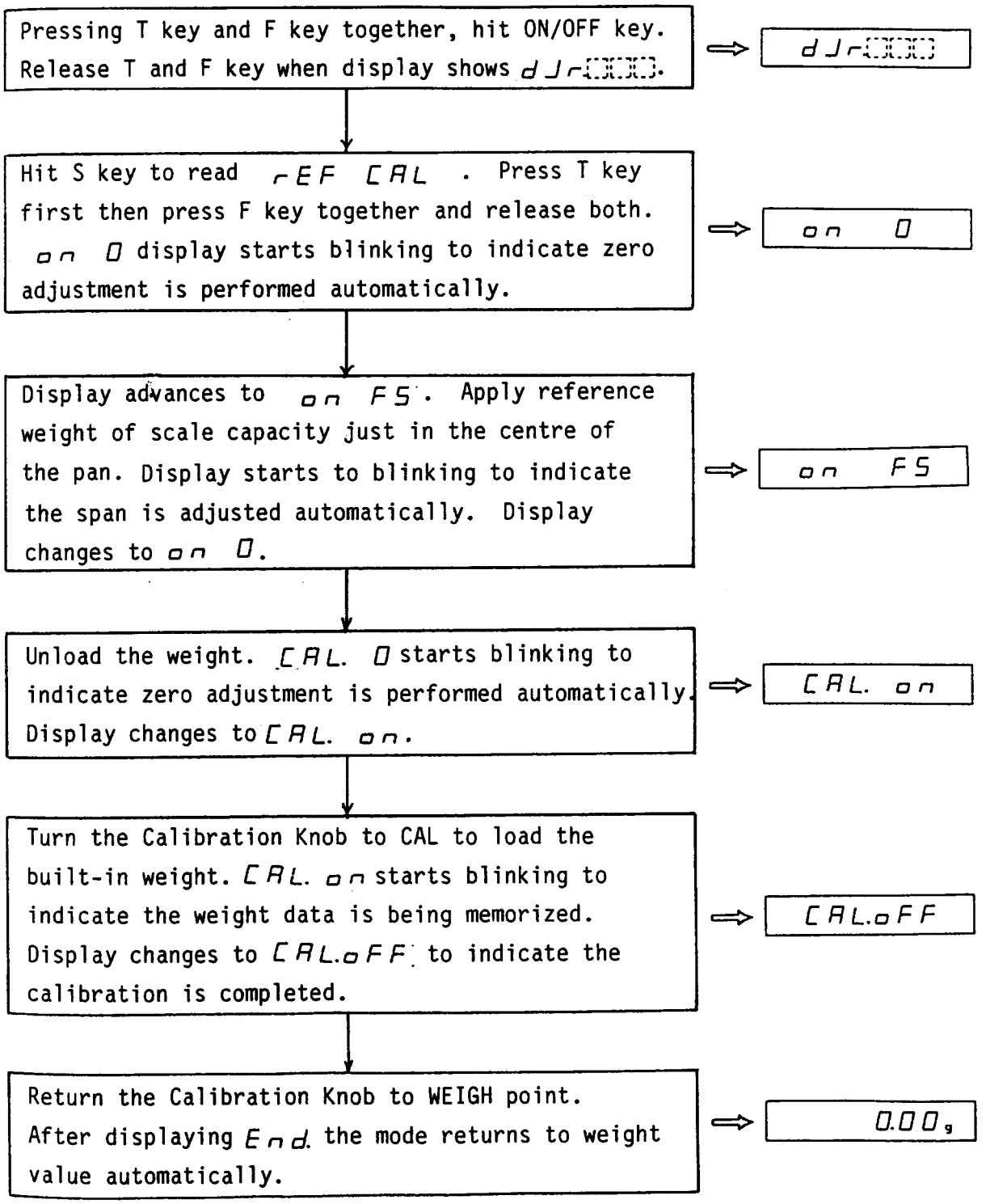
Caution

Erroneous setting of stoppers may cause destroying the tuning-fork sensor, which is very delicate.

Guide link should be stopped with the Maximum Weight *2 without fail.

4.4 **Calibration of Built - In Weight (Ref Cal) -** EG type

* Following does not describe the procedure of ordinary span calibration.
* This is the procedure of Calibration of the built- in weight with EG scales.
* It is necessary to adjust the linearity of the scale beforehand.
Refer to page 19.


Pressing T key and F key together, hit ON/OFF key.
Release T and F key when display shows dJr[ ][ ][ ].
dJr[ ][ ][ ]
Hit S key to read rEF CAL . Press T key first then press F key together and release both.
on 0 display starts blinking to indicate zero adjustment is performed automatically.
on 0
Display advances to on FS. Apply reference weight of scale capacity just in the centre of the pan. Display starts to blinking to indicate the span is adjusted automatically. Display changes to on 0.
on FS
Unload the weight. CAL. 0 starts blinking to indicate zero adjustment is performed automatically. Display changes to CAL. on.
CAL. on
Turn the Calibration Knob to CAL to load the built-in weight. CAL. on starts blinking to indicate the weight data is being memorized. Display changes to CAL.oFF to indicate the calibration is completed.
CAL.oFF
Return the Calibration Knob to WEIGH point. After displaying End the mode returns to weight value automatically.
0.00g

Cautions are on next page -------->

----------> continued from page 21

Cautions: 1. ***r E F.*** Cal must be carried out in following cases:
(1) When built-in weight is added or replaced.
(2) When linearity adjustments is done.
(3) When DJD board is replaced.

2. The quality/tolerance of the reference weight determine

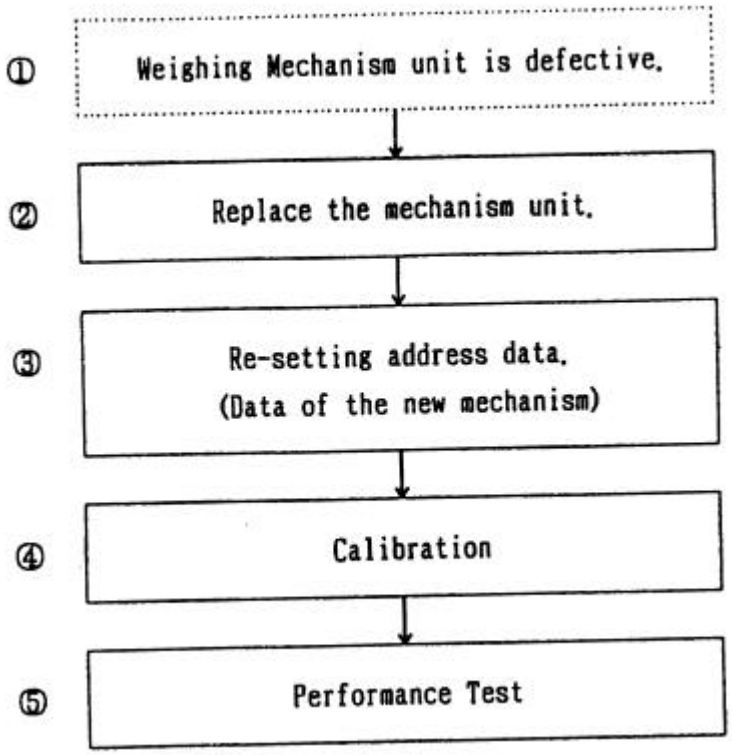
the accuracy of the scale.
Use weights of higher accuracy than the scale.

3. Adjust the level beforehand.
   The ref-calibration must be done in a good environment, no wind, no oscillation and no temperature changes.

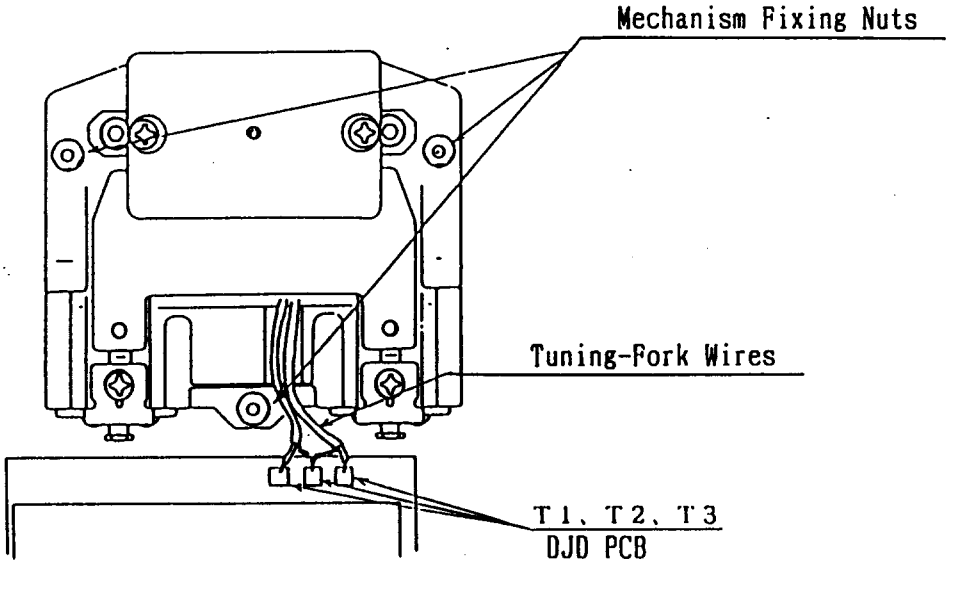
4. ***I - E r r :*** The reference weight is less than ½of F.S.
   2 - E r r : The data error exceeds 0.4%.
   Adjust the linearity.

5 SECTION 5. PARTS REPLACEMENT

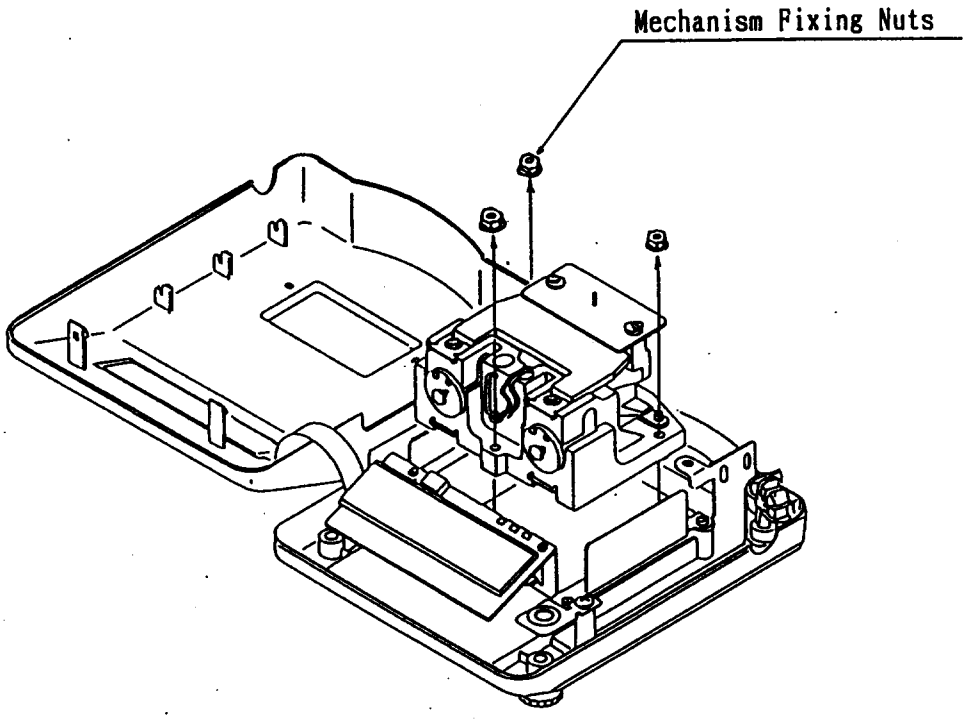
5.1 Sequence of mechanism unit replacement



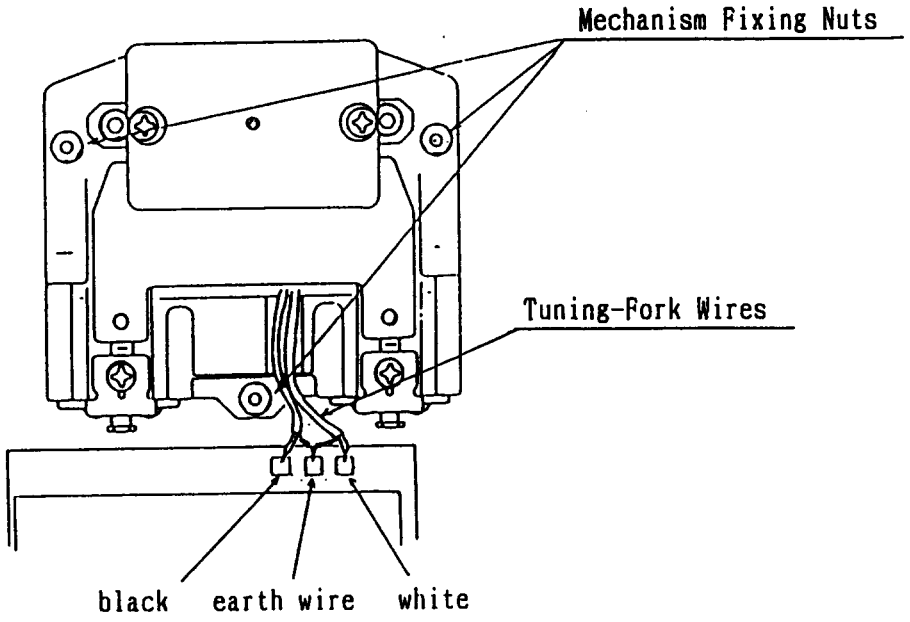
1. How to remove weighing mechanism
   (1) Remove the upper case referring to page 9.
   (2) Remove three mechanism fixing nuts by a nut driver of opp. 7mm.
   (3) Remove wires to the tuning-fork sensor, by welding solders at DJD circuit board.



   (4) Remove the mechanism unit by holding at the lower case

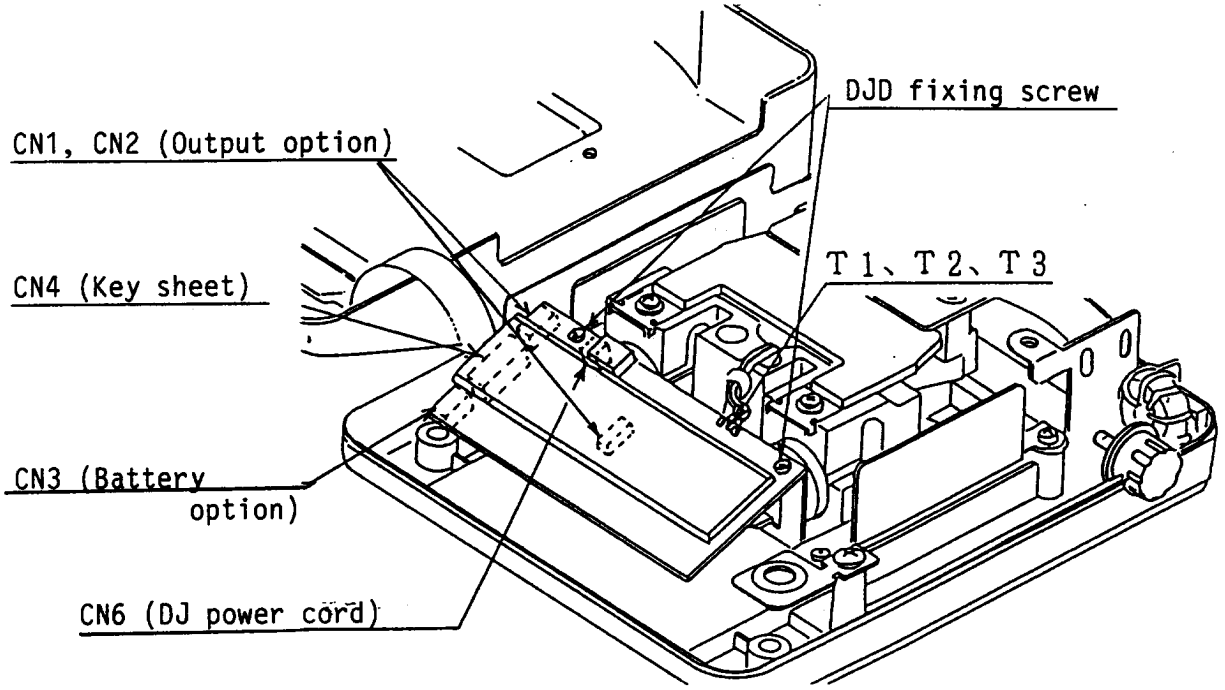


2. How to install weighing mechanism
   (1) Place the mechanism on the lower case.
   Fix it with three fixing nuts.
   (2) Solder wires of the tuning-fork sensor to the DJD circuit board.



3. Cover the scale referring to page 10

(1) Remove DJD board
   (1) Remove the upper case referring to page 9.
   (2) Unplug connectors at CN6 and CN4 on DJD board.
      With battery option, unplug CN3 with output option, unplug CN1 and CN2 in addition.
   (3) Unsolder T1, T2 and T3.
   (4) Remove DJD board by removing two DJD fixing screw.

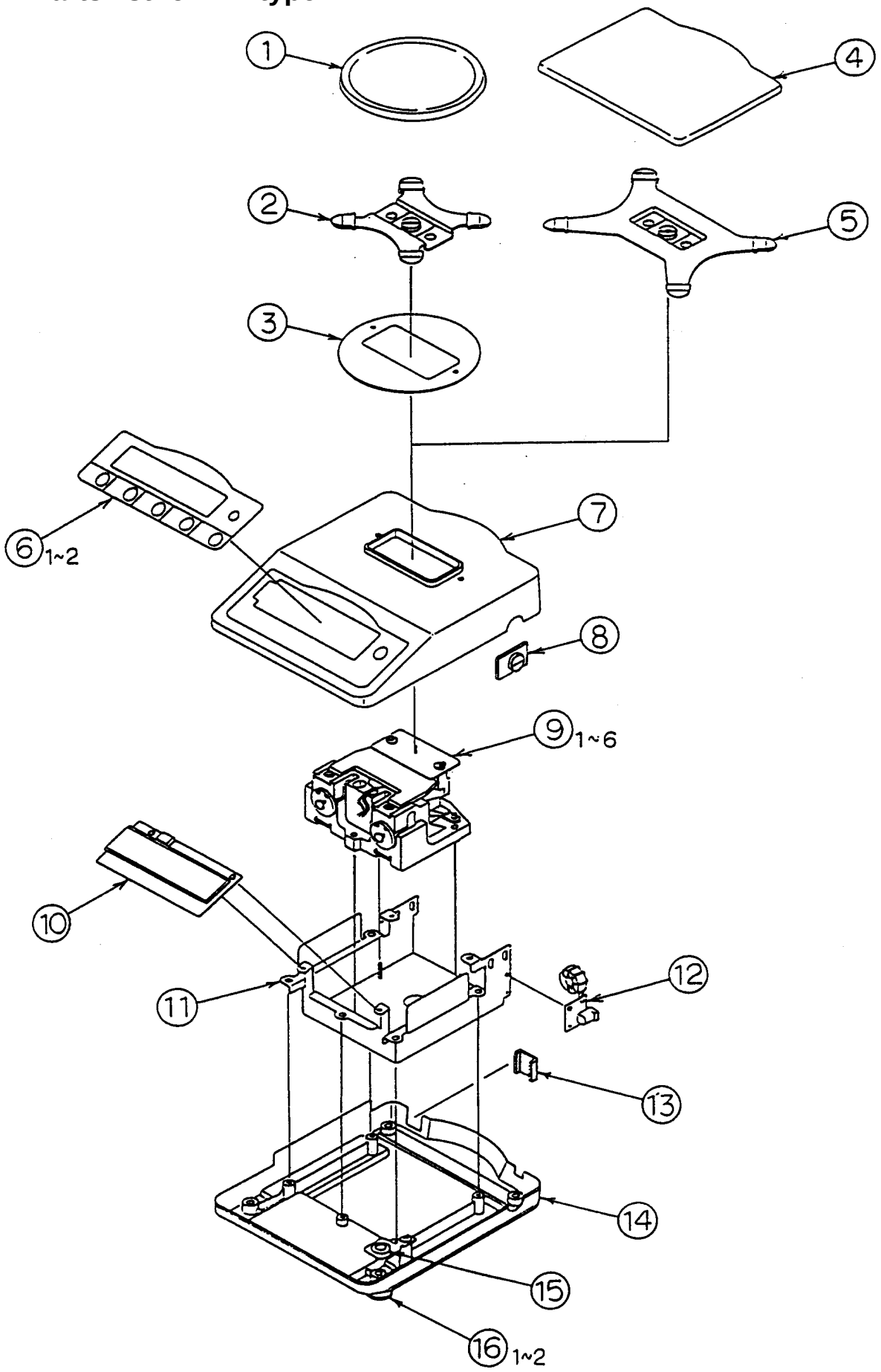


2. Installation of new PCB
   (1) Install a new DJD board with two fixing screws.
   (2) Plug connectors.

CN1	←	Output cord
CN3	←	Battery cord
CN6	←	DJ power cord (DC 9V in)
T1, T2, T3	←	Tuning-fork cord

   (3) Cover the scale refering to page 10.

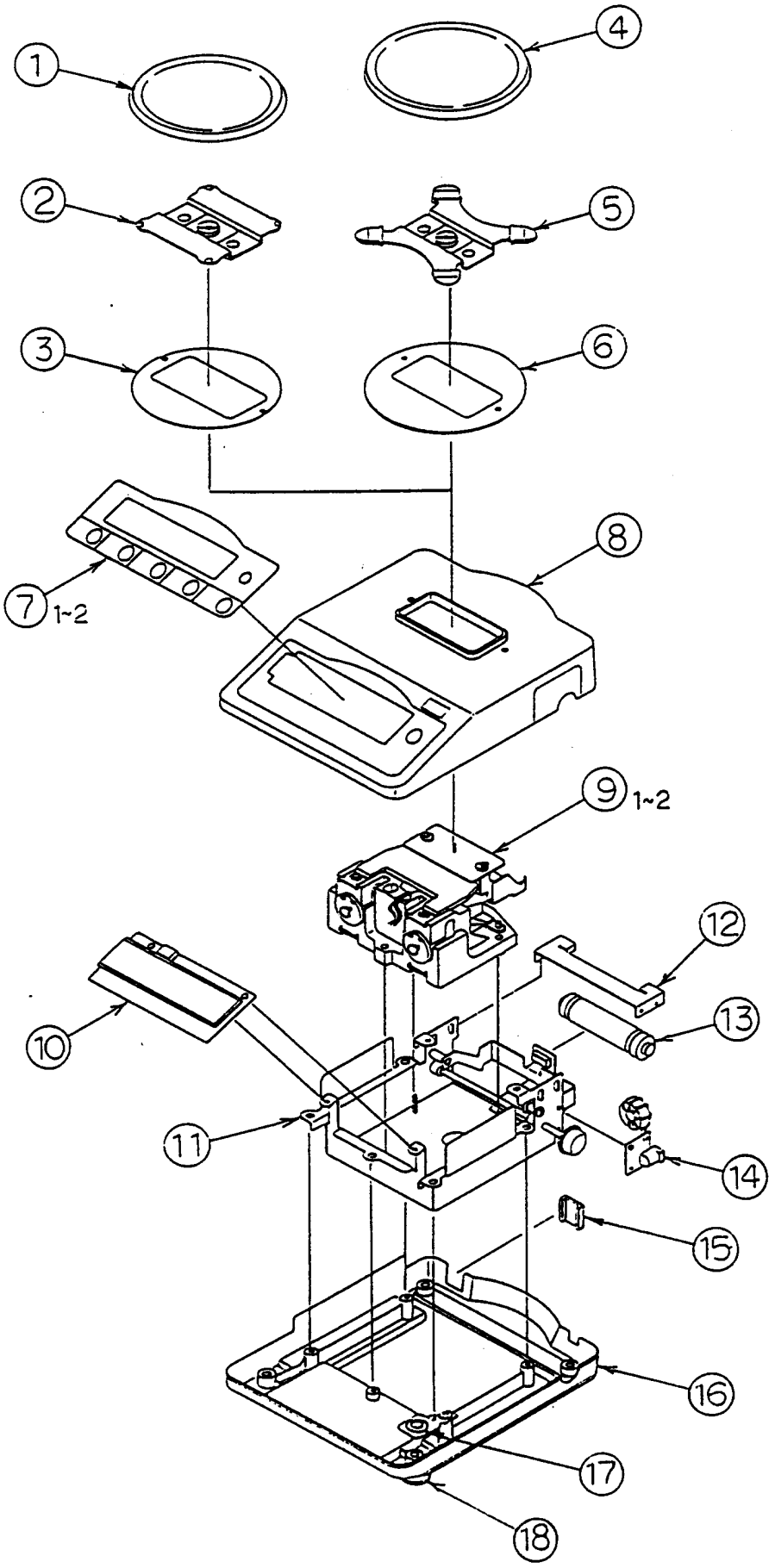
6 Parts list for EW type



Parts list for EW type

Part No.	Part Name	Material
1	140 ∅ round pan	Stainless steel
2	140 ∅ round pan base assembly	Aluminum
3	140 ∅ protector	Stainless steel
4	Square pan	Stainless steel
5	Square pan base assembly	Iron
6-1	EW panel	Polyester film
6-2	----------	----------
7	Top cover	ABS
8	Side cover	ABS
9-2	EW 300 - 2M Mechanism assembly	Aluminum
9-3	EW 600 - 2M Mechanism assembly	Aluminum
9-6	EW 6000 - 1M	Aluminum
10	DJD circuit board assembly	(Display PCB)
11	Mechanism unit base	Iron
12	DJLF circuit board assembly	(Power PCB)
13	Rear cover	ABS
14	Under cover	ABS
15	DJ level assembly	ABS + glass
16-1	Adjuster	Plastic
16-2	Adjuster	Rubber

Parts list for EG type



Parts list for EG type

Part No.	Part Name	Material
1	110 ∅ round pan	Stainless steel
2	110 ∅ round pan base assembly	Aluminum
3	110 ∅ protector	Stainless steel
4	140 ∅ round pan	Stainless steel
5	140 ∅ round pan base assembly	Aluminum
6	140 ∅ protector	Stainless steel
7-1	EG panel	Polyester film
7-2	----------	----------
8	Top cover	ABS
9-1	EG 300 - 3M Mechanism assembly	Aluminum
9-2	EG 600 - 2M Mechanism assembly	Aluminum
10	DJD circuit board assembly	(Display PCB)
11	Mechanism unit base	Iron
12	Span holder	Brass
13	Span weight	Stainless steel
14	DJLF circuit board assembly	(Power PCB)
15	Rear cover	ABS
16	Under cover	ABS
17	DJ level assembly	ABS + glass
18	Adjuster	Rubber